

SEQUENCE LISTING

<110> Advisys
Baylor College of Medicine

<120> SYNTHETIC MUSCLE PROMOTERS WITH ACTIVITIES EXCEEDING NATURALLY OCCURRING
REGULATORY SEQUENCES IN CARDIAC CELLS

<130> 108328.00161 - AVSI-0027

<150> US 60/423,536

<151> 2002-11-04

<160> 22

<170> PatentIn version 3.1

<210> 1

<211> 21

<212> DNA

<213> artificial sequence

<220>

<223> SRE control elements used in the promoters.

<400> 1

gacacccaaa tatggcgacg g

21

<210> 2

<211> 19

<212> DNA

<213> artificial sequence

<220>

<223> MEF-1 control element used in the promoters

<400> 2

ccaacacctg ctgcctgcc

19

<210> 3

<211> 19

<212> DNA

<213> artificial sequence

<220>

<223> MEF-2 control element used in the promoters.

<400> 3

cgctctaaaa ataactccc

19

<210> 4

<211> 13

<212> DNA

<213> artificial sequence

<220>

<223> TEF-1 control element used in the promoters.

<400> 4
caccattcct cac

13

<210> 5
<211> 335
<212> DNA
<213> artificial sequence

<220>
<223> Nucleic acid sequence of an eukaryotic promoter c5-12.

<400> 5
cggccgtccg ccttcggcac catcctcacg acacccaaat atggcgacgg gtgaggaatg 60
gtggggagtt atttttagag cggtgaggaa ggtgggcagg cagcaggtgt tggcgctcta 120
aaaataactc ccgggagtta tttttagagc ggaggaatgg tggacacca aatatggcga 180
cggttcctca ccgtcgcca tatttggtg tccgccctcg gccggggccg cattcctggg 240
ggccggggcgg tgctcccgcc cgcctcgata aaaggctccg gggccggcgg cggcccacga 300
gctacccgga ggagcgggag gcgccaagct ctaga 335

<210> 6
<211> 40
<212> PRT
<213> artificial sequence

<220>
<223> This is the artificial sequence for GHRH (1-40)OH.

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Xaa at position 1 may be tyrosine, or histidine

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa at position 2 may be alanine, valine, or isoleucine.

<220>
<221> MISC_FEATURE
<222> (15)..(15)
<223> Xaa at position 15 may be alanine, valine, or isoleucine.

<220>
<221> MISC_FEATURE
<222> (27)..(27)
<223> Xaa at position 27 may be methionine, or leucine.

<220>

<221> MISC_FEATURE
 <222> (28)..(28)
 <223> Xaa at position 28 may be serine or asparagine.

<400> 6

Xaa Xaa Asp Ala Ile Phe Thr Asn Ser Tyr Arg Lys Val Leu Xaa Gln
 1 5 10 15

Leu Ser Ala Arg Lys Leu Leu Gln Asp Ile Xaa Xaa Arg Gln Gln Gly
 20 25 30

Glu Arg Asn Gln Glu Gln Gly Ala
 35 40

<210> 7
 <211> 3534
 <212> DNA
 <213> artificial sequence

<220>
 <223> Nucleic acid sequence for the HV-GHRH plasmid.

<400> 7
 gttgtaaaac gacggccagt gaattgtaat acgactcact atagggcgaa ttggagctcc 60
 accgcggtgg cggccgtccg ccctcggcac catcctcacg acacccaaat atggcgacgg 120
 gtgaggaatg gtggggagtt atttttagag cggtgaggaa ggtgggcagg cagcaggtgt 180
 tggcgctcta aaaataactc ccgggagtta ttttttagagc ggaggaatgg tggacacca 240
 aatatggcga cggttcctca ccgctcgcca tatttggtg tccgccctcg gccggggccg 300
 cattcctggg ggccggggcg tgetcccgcc cgcctcgata aaaggctccg gggccggcg 360
 cgccccacga gctaccggga ggagcgggag gcgccaagct ctagaactag tggatcccaa 420
 ggcccaactc cccgaaccac tcagggtcct gtggacagct cacctagctg ccatggtgct 480
 ctgggtgttc ttctttgtga tcctcaccct cagcaacagc tcccactgct cccacctcc 540
 ccctttgacc ctcaggatgc ggcggcacgt agatgccatc ttcaccaaca gctaccggaa 600
 ggtgctggcc cagctgtccg cccgcaagct gctccaggac atcctgaaca ggcagcaggg 660
 agagaggaac caagagcaag gagcataatg actgcaggaa ttcgatatca agcttatcgg 720
 ggtggcatcc ctgtgacccc tccccagtgc ctctcctggc cctggaagtt gccactccag 780
 tgcccaccag ccttgctcta ataaaattaa gttgcatcat tttgtctgac taggtgtcct 840
 tctataatat tatgggggtg aggggggtg tatggagcaa ggggcaagtt gggaagacaa 900
 cctgtagggc ctgcggggtc tattgggaac caagctggag tgcagtggca caatcttggc 960

| | |
|--|------|
| tcactgcaat ctccgcctcc tgggttcaag cgattctcct gcctcagcct cccgagttgt | 1020 |
| tgggattcca ggcattgatg accagggtca gctaattttt gtttttttgg tagagacggg | 1080 |
| gtttcaccat attggccagg ctgggtctcca actcctaate tcaggtgatc taccacctt | 1140 |
| ggcctcccaa attgctggga ttacaggcgt gaaccactgc tcccttcctt gtccttctga | 1200 |
| ttttaaaata actataccag caggaggacg tccagacaca gcataggcta cctggccatg | 1260 |
| cccaaccggt gggacatttg agttgcttgc ttggcactgt cctctcatgc gttgggtcca | 1320 |
| ctcagtagat gcctgttgaa ttcgataccg tcgacctcga gggggggccc ggtaccagct | 1380 |
| tttgttccct ttagtgaggg ttaatttcga gcttggcgta atcatgggtca tagctgtttc | 1440 |
| ctgtgtgaaa ttgttatccg ctcaacaattc cacacaacat acgagccgga agcataaagt | 1500 |
| gtaaagcctg ggggtgcctaa tgagttagct aactcacatt aattgcgttg cgctcactgc | 1560 |
| ccgctttcca gtcgggaaac ctgtcgtgcc agctgcatta atgaatcggc caacgcgcgg | 1620 |
| ggagaggcgg tttgcgtatt gggcgctctt ccgcttcctc gctcactgac tcgctgcgct | 1680 |
| cggtcgttcg gctgcggcga gcggtatcag ctactcaaa ggcggtaata cggttatcca | 1740 |
| cagaatcagg ggataacgca ggaaagaaca tgtgagcaaa aggccagcaa aaggccagga | 1800 |
| accgtaaaaa ggcgcggttg ctggcggtttt tccataggct ccgccccctt gacgagcatc | 1860 |
| acaaaaatcg acgctcaagt cagagggtggc gaaacccgac aggactataa agataccagg | 1920 |
| cgtttcccc tggaaagctcc ctcgctgcgt ctctgttcc gaccctgccg cttaccggat | 1980 |
| acctgtccgc ctttctccct tcgggaagcg tggcgctttc tcatagctca cgctgtaggt | 2040 |
| atctcagttc ggtgtaggtc gttcgctcca agctgggctg tgtgcacgaa cccccgttc | 2100 |
| agcccgaccg ctgcgcctta tccggttaact atcgtcttga gtccaaccg gtaagacacg | 2160 |
| acttatcgcc actggcagca gccactggta acaggattag cagagcgagg tatgtaggcg | 2220 |
| gtgctacaga gttcttgaag tgggtggccta actacggcta cactagaaga acagtatttg | 2280 |
| gtatctgcgc tctgctgaag ccagttacct tcggaaaaag agttggtagc tcttgatccg | 2340 |
| gcaaacaaac caccgctggt agcggtggtt tttttgttg caagcagcag attacgcgca | 2400 |
| gaaaaaaagg atctcaagaa gatcctttga tcttttctac ggggtctgac gctcagaaga | 2460 |
| actcgtcaag aaggcgatag aaggcgatgc gctgcgaatc gggagcggcg ataccgtaaa | 2520 |
| gcacgaggaa gcggtcagcc cattcgccgc caagctcttc agcaatatca cgggtagcca | 2580 |
| acgctatgtc ctgatagcgg tccgccacac ccagccggcc acagtcgatg aatccagaaa | 2640 |
| agcggccatt ttccaccatg atattcggca agcaggcatc gccatgggtc acgacgagat | 2700 |
| cctcgccgtc gggcatgcgc gccttgagcc tggcgaacag ttcggctggc gegagccctt | 2760 |

| | |
|--|------|
| gatgctcttc gtccagatca tcctgatcga caagaccggc ttccatccga gtacgtgctc | 2820 |
| gctcgatgcg atgtttcgcg tgggtggcga atgggcaggt agccggatca agcgtatgca | 2880 |
| gccgccgcat tgcatacagc atgatggata ctttctcggc aggagcaagg tgagatgaca | 2940 |
| ggagatcctg ccccggcact tcgccaata gcagccagtc ccttcccgct tcagtgacaa | 3000 |
| cgctcgagcac agctgcgcaa ggaacgcccg tcgtggccag ccacgatagc cgcgctgcct | 3060 |
| cgtcctgcag ttcattcagg gcaccggaca ggtcggctctt gacaaaaaga accgggcgcc | 3120 |
| cctgcgctga cagccggaac acggcggcat cagagcagcc gattgtctgt tgtgcccagt | 3180 |
| catagccgaa tagcctctcc acccaagcgg ccggagaacc tgcgtgcaat ccatcttggt | 3240 |
| caatcatgcg aaacgatcct catcctgtct cttgatcaga tcttgatccc ctgcgccatc | 3300 |
| agatccttgg cggcaagaaa gccatccagt ttactttgca gggcttccca accttaccag | 3360 |
| agggcgcccc agctggcaat tccggttcgc ttgctgtcca taaaaccgcc cagtctagca | 3420 |
| actgttggga agggcgatcg gtgcgggcct cttcgctatt acgccagctg gcgaaagggg | 3480 |
| gatgtgctgc aaggcgatta agttgggtaa cgccagggtt ttcccagtca cgac | 3534 |

<210> 8

<211> 3534

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence for the TI-GHRH plasmid.

<400> 8

| | |
|--|-----|
| gttgtaaaac gacggccagt gaattgtaat acgactcact atagggcgaa ttggagctcc | 60 |
| accgcggtgg cggccgtccg ccctcggcac catcctcacg acacccaaat atggcgacgg | 120 |
| gtgaggaatg gtggggagtt attttttagag cggtgaggaa ggtgggcagg cagcaggtgt | 180 |
| tggcgctcta aaaataactc ccgggagtta ttttttagagc ggaggaatgg tggacacca | 240 |
| aatatggcga cggttcctca ccgctcgcca tatttggttg tccgccctcg gccggggccg | 300 |
| cattcctggg ggccggggcg tgctcccgcc cgctcgcata aaaggctccg gggccggcg | 360 |
| cggcccacga gctaccgga ggagcgggag gcgccaagct ctagaactag tggatcccaa | 420 |
| ggcccaactc cccgaaccac tcagggtcct gtggacagct cacctagctg ccatggtgct | 480 |
| ctgggtgttc ttctttgtga tcctcaccct cagcaacagc tcccactgct cccacctcc | 540 |
| ccctttgacc ctcaggatgc ggcggtatat cgatgccatc ttcaccaaca gctaccggaa | 600 |
| ggtgctggcc cagctgtccg cccgcaagct gctccaggac atcctgaaca ggcagcaggg | 660 |
| agagaggaac caagagcaag gagcataatg actgcaggaa ttcgatatca agcttatcgg | 720 |

| | |
|--|------|
| ggggtgcatcc ctgtgacccc tccccagtgc ctctcctggc cctggaagtt gccactccag | 780 |
| tgcccaccag ccttgtccta ataaaattaa gttgcatcat tttgtctgac taggtgtcct | 840 |
| tctataatat tatgggggtgg aggggggtgg tatggagcaa ggggcaagtt gggaagacaa | 900 |
| cctgtagggc ctgcggggtc tattgggaac caagctggag tgcagtggca caatcttggc | 960 |
| tcaactgcaat ctccgcctcc tgggttcaag cgattctcct gcctcagcct cccgagttgt | 1020 |
| tgggattcca ggcatgcatg accaggtcca gctaattttt gtttttttgg tagagacggg | 1080 |
| gtttcaccat attggccagg ctggtctcca actcctaata tcaggtgatc taccacctt | 1140 |
| ggcctcccaa attgctggga ttacaggcgt gaaccactgc tcccttcctt gtccttctga | 1200 |
| ttttaaaata actataccag caggaggacg tccagacaca gcataggcta cctggccatg | 1260 |
| cccaaccggt gggacatttg agttgcttgc ttggcactgt cctctcatgc gttgggtcca | 1320 |
| ctcagtagat gcctgttgaa ttcgataccg tgcacctcga gggggggccc ggtaccagct | 1380 |
| tttgttccct ttagtgaggg ttaatttcga gcttggcgta atcatggtca tagctgtttc | 1440 |
| ctgtgtgaaa ttgttatccg ctcaacaattc cacacaacat acgagccgga agcataaagt | 1500 |
| gtaaagcctg ggggtgcctaa tgagtgaagt aactcacatt aattgcgttg cgctcactgc | 1560 |
| ccgctttcca gtcgggaaac ctgtcgtgcc agctgcatta atgaatcggc caacgcgcgg | 1620 |
| ggagaggcgg tttgcgtatt gggcgctctt ccgcttcctc gctcactgac tcgctgcgct | 1680 |
| cggtcgttcg gctgcggcga gcggtatcag ctcaactcaa ggcggttaata cggttatcca | 1740 |
| cagaatcagg ggataacgca ggaaagaaca tgtgagcaaa aggccagcaa aaggccagga | 1800 |
| accgtaaaaa ggccgcgttg ctggcgtttt tccataggct ccgccccctt gacgagcatc | 1860 |
| acaaaaatcg acgctcaagt cagaggtggc gaaacccgac aggactataa agataccagg | 1920 |
| cgtttcccc tggaagctcc ctcggtcgct ctctgttcc gaccctgccg cttaccggat | 1980 |
| acctgtccgc ctttctcct tcgggaagcg tggcgctttc tcatagctca cgctgtaggt | 2040 |
| atctcagttc ggtgtaggtc gttcgctcca agctgggctg tgtgcacgaa cccccgctt | 2100 |
| agcccgaccg ctgcgcctta tccggttaact atcgtcttga gtccaacccg gtaagacacg | 2160 |
| acttatcgcc actggcagca gccactggta acaggattag cagagcgagg tatgtaggcg | 2220 |
| gtgctacaga gttcttgaag tgggtggccta actacggcta cactagaaga acagtatttg | 2280 |
| gtatctgcgc tctgctgaag ccagttacct tcggaaaaag agttggtagc tcttgatccg | 2340 |
| gcaaacaaac caccgctggg agcgggtggt tttttgtttg caagcagcag attacgcgca | 2400 |
| gaaaaaaagg atctcaagaa gatcctttga tcttttctac ggggtctgac gtcagaaga | 2460 |
| actcgtcaag aaggcgatag aaggcgatgc gctgcgaatc gggagcggcg ataccgtaaa | 2520 |

| | |
|--|------|
| gcacgaggaa gcggtcagcc cattcgccgc caagctcttc agcaatatca cgggtagcca | 2580 |
| acgctatgtc ctgatagcgg tccgccacac ccagccggcc acagtcgatg aatccagaaa | 2640 |
| agcggccatt ttccaccatg atattcggca agcaggcatc gccatgggtc acgacgagat | 2700 |
| cctcgccgtc gggcatgcgc gccttgagcc tggcgaacag ttcgggtggc gcgagcccct | 2760 |
| gatgtctctc gtccagatca tcctgatcga caagaccggc ttccatccga gtacgtgctc | 2820 |
| gctcgatgcg atgtttcgct tgggtggtcga atgggcaggt agccggatca agcgtatgca | 2880 |
| gccgccgc at tgcacagcc atgatggata ctttctcggc aggagcaagg tgagatgaca | 2940 |
| ggagatcctg ccccggcact tcgccaata gcagccagtc ctttcccgct tcagtgacaa | 3000 |
| cgtcgagcac agctgcgcaa ggaacgcccg tcgtggccag ccacgatagc cgcgtgcct | 3060 |
| cgctctgcag ttcatcagg gcaccggaca ggtcggctctt gacaaaaaga accgggcgcc | 3120 |
| cctgcgtga cagccggaac acggcggcat cagagcagcc gattgtctgt tgtgcccagt | 3180 |
| catagccgaa tagcctctcc acccaagcgg ccggagaacc tgcgtgcaat ccatcttggt | 3240 |
| caatcatgcg aaacgatcct catcctgtct cttgatcaga tcttgatccc ctgcgccatc | 3300 |
| agatccttgg cggcaagaaa gccatccagt ttactttgca gggcttccca accttaccag | 3360 |
| agggcgcccc agctggcaat tccggttcgc ttgctgtcca taaaaccgcc cagtctagca | 3420 |
| actgttggga agggcgatcg gtgcgggcct cttegtatt acgccagctg gcgaaagggg | 3480 |
| gatgtgctgc aaggcgatta agttgggtaa cgccagggtt ttcccagtca cgac | 3534 |

<210> 9
 <211> 3534
 <212> DNA
 <213> artificial sequence

<220>
 <223> Nucleic acid sequence for the TV-GHRH plasmid.

| | |
|--|-----|
| <400> 9 | |
| gttgtaaaac gacggccagt gaattgtaat acgactcact atagggcgaa ttggagctcc | 60 |
| accgcggtgg cggccgtccg cctcggcac catcctcacg acacccaaat atggcgacgg | 120 |
| gtgaggaatg gtggggagtt attttttagag cggtgaggaa ggtgggcagg cagcaggtgt | 180 |
| tggcgctcta aaaataactc ccgggagtta ttttttagagc ggaggaatgg tggacacca | 240 |
| aatatggcga cggttcctca cccgtcgcca tatttggggtg tccgccctcg gccggggccg | 300 |
| cattcctggg ggccggggcg tgctcccgcc cgctcgata aaaggctccg gggccggcgg | 360 |
| cggcccacga gctaccggga ggagcgggag gcgccaagct ctagaactag tggatcccaa | 420 |
| ggcccaactc cccgaaccac tcagggtcct gtggacagct cacctagctg ccatggtgct | 480 |

| | |
|--|------|
| ctgggtgttc ttctttgtga tctcaccct cagcaacagc tccactgct cccacctcc | 540 |
| ccctttgacc ctccaggatgc ggcggtatgt agatgccatc ttcaccaaca gctaccggaa | 600 |
| ggtgctggcc cagctgtccg cccgcaagct gctccaggac atcctgaaca ggcagcaggg | 660 |
| agagaggaac caagagcaag gagcataatg actgcaggaa ttcgatatca agcttatcgg | 720 |
| ggtggcatcc ctgtgacccc tccccagtgc ctctcctggc cctggaagtt gccactccag | 780 |
| tgcccaccag ccttgtccta ataaaattaa gttgcatcat tttgtctgac taggtgtcct | 840 |
| tctataatat tatgggggtg aggggggtg tatggagcaa ggggcaagtt gggaagacaa | 900 |
| cctgtagggc ctgcgggggc tattgggaac caagctggag tgcagtggca caatcttggc | 960 |
| tcaactgcaat ctccgcctcc tgggttcaag cgattctcct gcctcagcct cccgagttgt | 1020 |
| tgggattcca ggcatgcatg accaggtcca gctaattttt gtttttttgg tagagacggg | 1080 |
| gtttcaccat attggccagg ctggtctcca actcctaate tcaggtgatc taccacctt | 1140 |
| ggcctcccaa attgctggga ttacaggcgt gaaccactgc tcccttcctt gtccttctga | 1200 |
| ttttaaaata actataccag caggaggacg tccagacaca gcataggcta cctggccatg | 1260 |
| cccaaccggt gggacatttg agttgcttgc ttggcactgt cctctcatgc gttgggtcca | 1320 |
| ctcagtagat gcctgttgaa ttcgataccg tcgacctcga gggggggccc ggtaccagct | 1380 |
| tttgttcctt ttagtgaggg ttaatttcga gcttggcgta atcatggtca tagctgtttc | 1440 |
| ctgtgtgaaa ttgttatccg ctcaaatc cacacaacat acgagccgga agcataaagt | 1500 |
| gtaaagcctg ggggtgcctaa tgagttagct aactcacatt aattgcgttg cgctcactgc | 1560 |
| ccgctttcca gtcgggaaac ctgtcgtgcc agctgcatta atgaatcggc caacgcgcgg | 1620 |
| ggagaggcgg tttgcgtatt gggcgctctt ccgcttcctc gctcactgac tcgctgcgct | 1680 |
| cggtcgttcg gctgcggcga gcggtatcag ctcaactcaa ggcggtaata cggttatcca | 1740 |
| cagaatcagg ggataacgca ggaaagaaca tgtgagcaaa aggccagcaa aaggccagga | 1800 |
| accgtaaaaa ggccgcgttg ctggcgtttt tccataggct ccgccccctt gacgagcatc | 1860 |
| acaaaaatcg acgctcaagt cagaggtggc gaaacccgac aggactataa agataccagg | 1920 |
| cgtttcccc tggaagctcc ctcgctcgct ctctgttcc gaccctgccg cttaccggat | 1980 |
| acctgtccgc ctttctcct tcgggaagcg tggcgctttc tcatagctca cgctgtaggt | 2040 |
| atctcagttc ggtgtaggtc gtctgctcca agctgggctg tgtgcacgaa cccccgttc | 2100 |
| agccccagcg ctgcgcctta tccggtaact atcgtcttga gtccaacccg gtaagacacg | 2160 |
| acttatcgcc actggcagca gccactggta acaggattag cagagcgagg tatgtaggcg | 2220 |
| gtgctacaga gttcttgaag tgggtggcta actacggcta cactagaaga acagtatttg | 2280 |

| | |
|--|------|
| gtatctgcgc tctgctgaag ccagttacct tcggaaaaag agttggtagc tcttgatccg | 2340 |
| gcaaacaaac caccgctggt agcgggtggt tttttgtttg caagcagcag attacgcgca | 2400 |
| gaaaaaaagg atctcaagaa gatcctttga tcttttctac ggggtctgac gctcagaaga | 2460 |
| actcgtcaag aaggcgatag aaggcgatgc gctgcgaatc gggagcggcg ataccgtaaa | 2520 |
| gcacgaggaa gcggtcagcc cattcgccgc caagctcttc agcaatatca cgggtagcca | 2580 |
| acgctatgtc ctgatagcgg tccgccacac ccagccggcc acagtcgatg aatccagaaa | 2640 |
| agcggccatt ttccaccatg atattcggca agcaggcatc gccatgggtc acgacgagat | 2700 |
| cctcgccgtc gggcatgcgc gccttgagcc tggcgaacag ttcggctggc gcgagcccct | 2760 |
| gatgctcttc gtccagatca tcctgatcga caagaccggc ttccatccga gtacgtgctc | 2820 |
| gctcgatgcg atgtttcgct tgggtggtcga atgggcaggt agccggatca agcgtatgca | 2880 |
| gccgccgcat tgcatacagc atgatggata ctttctcggc aggagcaagg tgagatgaca | 2940 |
| ggagatcctg ccccggcact tcgccaata gcagccagtc ccttcccgtc tcagtgacaa | 3000 |
| cgctcagcac agctgcgcaa ggaacgcccg tcgtggccag ccacgatagc cgcgctgcct | 3060 |
| cgctcctgcag ttcatcagg gcaccggaca ggtcggctctt gacaaaaaga accgggcgcc | 3120 |
| cctgcgctga cagccggaac acggcggcac cagagcagcc gattgtctgt tgtgcccagt | 3180 |
| catagccgaa tagcctctcc acccaagcgg ccggagaacc tgcgtgcaat ccatcttggt | 3240 |
| caatcatgcg aaacgatcct catcctgtct cttgatcaga tcttgatccc ctgcgccatc | 3300 |
| agatccttgg cggaagaaa gccatccagt ttactttgca gggcttccca accttaccag | 3360 |
| agggcgcccc agctggcaat tccggttcgc ttgctgtcca taaaaccgcc cagtctagca | 3420 |
| actgttggga agggcgatcg gtgcgggcct cttcgctatt acgccagctg gcgaaagggg | 3480 |
| gatgtgctgc aaggcgatta agttgggtaa cgccagggtt ttcccagtca cgac | 3534 |

<210> 10

<211> 3534

<212> DNA

<213> artificial sequence

<220>

<223> Nucleic acid sequence for the 15/27/28 GHRH plasmid.

<400> 10

| | |
|---|-----|
| gttgtaaaac gacggccagt gaattgtaat acgactcact atagggcgaa ttggagctcc | 60 |
| accgcggtgg cggccgtccg cctcggcac catcctcacg acacccaaat atggcgacgg | 120 |
| gtgaggaatg gtggggagtt atttttagag cggtgaggaa ggtgggcagg cagcaggtgt | 180 |
| tggcgctcta aaaataactc ccgggagtta tttttagagc ggaggaatgg tggacacca | 240 |

| | | | | | | |
|------------|------------|-------------|------------|-------------|------------|------|
| aatatggcga | cggttcctca | cccgtcgcca | tatttggtg | tccgccctcg | gccggggccg | 300 |
| cattcctggg | ggccgggagg | tgctcccgcc | cgcctcgata | aaaggctccg | gggcccggcg | 360 |
| cggcccacga | gctacccgga | ggagcgggag | gcgccaagct | ctagaactag | tggatcccaa | 420 |
| ggcccaactc | cccgaaccac | tcagggtcct | gtggacagct | cacctagctg | ccatggtgct | 480 |
| ctgggtgttc | ttctttgtga | tcctcaccct | cagcaacagc | tcccactgct | ccccacctcc | 540 |
| ccctttgacc | ctcaggatgc | ggcggatat | cgatgccatc | ttcaccaaca | gctaccggaa | 600 |
| ggtgctggcc | cagctgtccg | cccgcaagct | gctccaggac | atcctgaaca | ggcagcaggg | 660 |
| agagaggaac | caagagcaag | gagcataatg | actgcaggaa | ttcgatatca | agcttatcgg | 720 |
| ggtggcatcc | ctgtgacccc | tccccagtgc | ctctcctggc | cctggaagtt | gccactccag | 780 |
| tgcccaccag | ccttgtccta | ataaaattaa | gttgcatcat | tttgtctgac | taggtgtcct | 840 |
| tctataatat | tatggggtgg | aggggggtgg | tatggagcaa | ggggcaagtt | gggaagacaa | 900 |
| cctgtagggc | ctgcggggtc | tattgggaac | caagctggag | tgcagtggca | caatcttggc | 960 |
| tcactgcaat | ctccgcctcc | tgggttcaag | cgattctcct | gcctcagcct | cccagtttgt | 1020 |
| tgggattcca | ggcatgcatg | accagggtca | gctaattttt | gttttttttg | tagagacggg | 1080 |
| gtttcaccat | attggccagg | ctggtctcca | actcctaata | tcagggtgatc | taccacctt | 1140 |
| ggcctcccaa | attgctggga | ttacaggcgt | gaaccactgc | tcccttccct | gtccttctga | 1200 |
| ttttaaaata | actataccag | caggaggacg | tccagacaca | gcataggcta | cctggccatg | 1260 |
| cccaaccggg | gggacatttg | agttgcttgc | ttggcactgt | cctctcatgc | gttgggtcca | 1320 |
| ctcagtagat | gcctgttgaa | ttcgataccg | tcgacctcga | ggggggggccc | ggtaccagct | 1380 |
| tttgttccct | ttagtgaggg | ttaatttcga | gcttggcgta | atcatggtca | tagctgtttc | 1440 |
| ctgtgtgaaa | ttgttatccg | ctcacaattc | cacacaacat | acgagccgga | agcataaagt | 1500 |
| gtaaagcctg | gggtgcctaa | tgagtgagct | aactcacatt | aattgcgttg | cgctcactgc | 1560 |
| ccgctttcca | gtcgggaaac | ctgtcgtgcc | agctgcatta | atgaatcggc | caacgcgcgg | 1620 |
| ggagaggcgg | tttgcgatt | gggcgctctt | ccgcttctct | gctcactgac | tcgctgcgct | 1680 |
| cggtcgttcg | gctgcggcga | gcggtatcag | ctcactcaaa | ggcggtaata | cggttatcca | 1740 |
| cagaatcagg | ggataacgca | ggaaagaaca | tgtgagcaaa | aggccagcaa | aaggccagga | 1800 |
| accgtaaaaa | ggccgcgttg | ctggcggtttt | tccataggct | ccgccccct | gacgagcatc | 1860 |
| acaaaaatcg | acgctcaagt | cagagggtggc | gaaacccgac | aggactataa | agataccagg | 1920 |
| cgtttcccc | tggaagctcc | ctcgtgcgct | ctcctgttcc | gacctgccc | cttaccggat | 1980 |
| acctgtccgc | ctttctccct | tcgggaagcg | tggcgctttc | tcatagctca | cgctgtaggt | 2040 |

| | |
|--|------|
| atctcagttc ggtgtaggtc gttecgctcca agctgggctg tgtgcacgaa cccccgttc | 2100 |
| agcccgaccg ctgcgcctta tccggttaact atcgtcttga gtccaacccg gtaagacacg | 2160 |
| acttatcgcc actggcagca gccactggta acaggattag cagagcgagg tatgtaggcg | 2220 |
| gtgctacaga gttcttgaag tgggtggccta actacggcta cactagaaga acagtatttg | 2280 |
| gtatctgcg cttgctgaag ccagttacct tcggaaaaag agttggtagc tcttgatccg | 2340 |
| gcaaacaaac caccgctggt agcgggtggt tttttgtttg caagcagcag attacgcgca | 2400 |
| gaaaaaaagg atctcaagaa gatcctttga tcttttctac ggggtctgac gctcagaaga | 2460 |
| actcgtcaag aaggcgatag aaggcgatgc gctgcgaatc gggagcggcg ataccgtaaa | 2520 |
| gcacgaggaa gcggtcagcc cattcgccgc caagctcttc agcaatatca cgggtagcca | 2580 |
| acgctatgtc ctgatagcgg tccgccacac ccagccggcc acagtcgatg aatccagaaa | 2640 |
| agcggccatt ttccaccatg atattcggca agcaggcatc gccatgggtc acgacgagat | 2700 |
| cctcgccgtc gggcatgcgc gccttgagcc tggcgaacag ttcggctggc gcgagcccct | 2760 |
| gatgctcttc gtccagatca tcttgatcga caagaccggc ttccatccga gtacgtgctc | 2820 |
| gctcgatgcg atgtttcgt tgggtggtcga atgggcaggt agccggatca agcgtatgca | 2880 |
| gccgccgat tgcacagcc atgatggata ctttctcggc aggagcaagg tgagatgaca | 2940 |
| ggagatcctg ccccggaact tcgcccata gcagccagtc ccttcccgtc tcagtgacaa | 3000 |
| cgtcgagcac agctgcgcaa ggaacgcccg tcgtggccag ccacgatagc cgcgctgcct | 3060 |
| cgtcctgcag ttcattcagg gcaccggaca ggtcggctct gacaaaaaga accgggcgcc | 3120 |
| cctgcgctga cagccggaac acggcggcat cagagcagcc gattgtctgt tgtgccagt | 3180 |
| catagccgaa tagcctctcc acccaagcgg ccggagaacc tgcgtgcaat ccatcttggt | 3240 |
| caatcatgcg aaacgatcct catcctgtct cttgatcaga tcttgatccc ctgcgccatc | 3300 |
| agatccttgg cggcaagaaa gccatccagt ttactttgca gggcttccca accttaccag | 3360 |
| agggcgcccc agctggcaat tccggttcgc ttgctgtcca taaaaccgcc cagtctagca | 3420 |
| actgttggga agggcgatcg gtgcgggcct cttcgctatt acgccagctg gcgaaagggg | 3480 |
| gatgtgctgc aaggcgatta agttgggtaa cgccagggtt ttcccagtcg cgac | 3534 |

<210> 11

<211> 2710

<212> DNA

<213> artificial sequence

<220>

<223> Vector with a mouse codon optimized GHRH analog sequence

<400> 11

| | | | | | | |
|-------------|------------|-------------|-------------|------------|-------------|------|
| tgtaatacga | ctcactatag | ggcgaattgg | agctccaccg | cggtggcggc | cgcccgccct | 60 |
| cggcaccatc | ctcacgacac | ccaaatatgg | cgacgggtga | ggaatgggtg | ggagttattt | 120 |
| ttagagcggg | gaggaagggt | ggcaggcagc | aggtggttgg | gctctaaaaa | taactcccgg | 180 |
| gagttatttt | tagagcggag | gaatgggtga | cacccaaata | tggcgacggg | tcctcaccgg | 240 |
| tcgccatatt | tgggtgtccg | ccctcggccg | gggcgcgatt | cctggggggc | gggcgggtgct | 300 |
| cccgcgccgc | tcgataaaag | gctccggggc | cggcgggcgg | ccacgagcta | cccggaggag | 360 |
| cgggaggcgc | caagcggatc | ccaaggccca | actccccgaa | ccactcaggg | tcctgtggac | 420 |
| agctcaccta | gctgccatgg | tgctctgggt | gctctttgtg | atcctcatcc | tcaccagcgg | 480 |
| cagccactgc | agcctgcctc | ccagccctcc | cttcaggatg | cagaggcacg | tggacgccat | 540 |
| cttcaccacc | aactacagga | agctgctgag | ccagctgtac | gccaggaagg | tgatccagga | 600 |
| catcatgaac | aagcagggcg | agaggatcca | ggagcagagg | gccaggctga | gctgataagc | 660 |
| ttatcggggg | ggcatccctg | tgaccctccc | ccagtgcctc | tcctggccct | ggaagttgcc | 720 |
| actccagtgc | ccaccagcct | tgtcctaata | aaattaagtt | gcatcatttt | gtctgactag | 780 |
| gtgtccttct | ataatattat | gggggtggagg | gggggtggtat | ggagcaaggg | gcaagttggg | 840 |
| aagacaacct | gtagggctcg | aggggggggc | cggtagccagc | ttttgttccc | tttagtgagg | 900 |
| gttaatttcg | agcttggtct | tcgcttccct | cgctcactga | ctcgctgcgc | tcggtcgttc | 960 |
| ggctgcggcg | agcggtatca | gctcactcaa | aggcggtaat | acggttatcc | acagaatcag | 1020 |
| gggataacgc | aggaaagaac | atgtgagcaa | aaggccagca | aaaggccagg | aaccgtaaaa | 1080 |
| aggccgcggt | gctggcggtt | ttccataggc | tcgcggccccc | tgacgagcat | cacaaaaatc | 1140 |
| gacgtcaag | tcagaggtgg | cgaaacccga | caggactata | aagataccag | gcgtttcccc | 1200 |
| ctggaagctc | cctcgtgcgc | tctcctgttc | cgaccctgcc | gcttaccgga | tacctgtccg | 1260 |
| cctttctccc | ttcgggaagc | gtggcgcttt | ctcatagctc | acgctgtagg | tatctcagtt | 1320 |
| cgggtgtaggt | cgttcgtccc | aagctgggct | gtgtgcacga | acccccggt | cagcccgacc | 1380 |
| gctgcgcctt | atccggtaac | tatcgtcttg | agtccaaccc | ggtaagacac | gacttatcgc | 1440 |
| cactggcagc | agccactggg | aacaggatta | gcagagcgag | gtatgtaggc | ggtgctacag | 1500 |
| agttcttgaa | gtgggtggct | aactacggct | acactagaag | aacagtattt | ggtatctgcg | 1560 |
| ctctgctgaa | gccagttacc | ttcggaaaaa | gagttggtag | ctcttgatcc | ggcaaaaaaa | 1620 |
| ccaccgctgg | tagcgggtgg | ttttttgttt | gcaagcagca | gattacgcgc | agaaaaaaag | 1680 |
| gatctcaaga | agatcctttg | atcttttcta | cggggctagc | gcttagaaga | actcatccag | 1740 |
| cagacggtag | aatgcaatac | gttgagagtc | tggagctgca | ataccataca | gaaccaggaa | 1800 |

| | |
|---|------|
| acggtcagcc cattcaccac ccagttcctc tgcaatgtca cgggtagcca gtgcaatgtc | 1860 |
| ctggtaacgg tctgcaacac ccagacgacc acagtcaatg aaaccagaga aacgaccatt | 1920 |
| ctcaaccatg atgttcggca ggcattgcac accatgagta actaccaggt cctcaccatc | 1980 |
| cggcatacga gctttcagac gtgcaaacag ttcagccggg gccagaccct gatgttcctc | 2040 |
| atccagggtca tcttgggtcaa ccagacctgc ttccatacgg gtacgagcac gttcaatacg | 2100 |
| atgtttttgcc tgggtgggtcaa acggacaggt agctgggtcc aggggtgtgca gacgacgcat | 2160 |
| tgcattcagcc atgatagaaa ctttctctgc cggagccagg tgagaagaca gcaggctcctg | 2220 |
| acccggaact tcaccagca gcagccagtc acgaccagct tcagtaacta catccagaac | 2280 |
| tgcagcacac ggaacaccag tgggtgccag ccaagacaga cgagctgctt catcctgcag | 2340 |
| ttcattcaga gcaccagaca ggtcagtttt aacaaacaga actggacgac cctgtgcaga | 2400 |
| cagacggaaa acagctgcat cagagcaacc aatgggtctgc tgtgccagtc cataaccaa | 2460 |
| cagacgttca acccaggctg ccggagaacc tgcattgcaga ccattcctgtt caatcatgcg | 2520 |
| aaacgaccc cctcctgtct cttgatcaga tcttgatccc ctgcgccatc agatccttgg | 2580 |
| cggcaagaaa gccatccagt ttactttgca gggcttccca accttaccag agggcgcccc | 2640 |
| agctggcaat tccgggttcgc ttgctgtcca taaaaccgcc cagtctagca actgttgagg | 2700 |
| agggcgatcg | 2710 |

<210> 12

<211> 2713

<212> DNA

<213> artificial sequence

<220>

<223> Vector with a rat codon optimized GHRH analog sequence

<400> 12

| | |
|--|-----|
| tgtaatacga ctactatag ggcgaattgg agtccaccg cgggtggcggc cgtccgccct | 60 |
| cggcaccatc ctcacgacac ccaaatatgg cgacgggtga ggaatgggtg ggagttattt | 120 |
| ttagagcggg gaggaagggtg ggcaggcagc aggtgttggc gctctaaaaa taactcccgg | 180 |
| gagttatttt tagagcggag gaatgggtgga cacccaaata tggcgacggg tcctcaccgg | 240 |
| tcgccatatt tgggtgtccg ccctcggccg gggccgcatt cctggggggc gggcggtgct | 300 |
| cccggccgcc tcgataaaag gctccggggc cggcgggcggc ccacgagcta cccggaggag | 360 |
| cgggaggcgc caagcggatc ccaaggccca actccccgaa ccactcaggg tcctgtggac | 420 |
| agctcaccta gctgccatgg ccctgtgggt gttcttcgtg ctgctgacct tgaccagcgg | 480 |
| aagccactgc agcctgcctc ccagccctcc cttcagggtg cgccggcacg ccgacgccat | 540 |

| | |
|--|------|
| cttcaccagc agctacagga ggatcctggg ccagctgtac gctaggaagc tcctgcacga | 600 |
| gatcatgaac aggcagcagg gcgagaggaa ccaggagcag aggagcaggt tcaactgata | 660 |
| agcttatcgg ggtggcatcc ctgtgacccc tccccagtgc ctctcctggc cctggaagtt | 720 |
| gccactccag tgcccaccag ccttgctcta ataaaattaa gttgcatcat tttgtctgac | 780 |
| taggtgtcct tctataatat tatgggggtgg aggggggtgg tatggagcaa ggggcaagtt | 840 |
| gggaagacaa cctgtagggc tcgagggggg gcccggtacc agcttttgtt cccttttagtg | 900 |
| aggggttaatt tcgagcttgg tcttccgctt cctcgctcac tgactcgctg cgctcggtcg | 960 |
| ttcggctgcg gcgagcggta tcagctcact caaaggcggc aatacggta tccacagaat | 1020 |
| caggggataa cgcaggaaag aacatgtgag caaaaggcca gcaaaaggcc aggaaccgta | 1080 |
| aaaaggccgc gttgctggcg tttttccata ggctccgccc ccctgacgag catcacaaaa | 1140 |
| atcgacgctc aagtcagagg tggcgaaacc cgacaggact ataaagatac caggcgtttc | 1200 |
| cccctggaag ctccctcgtg cgctctcctg ttccgaccct gccgcttacc ggatacctgt | 1260 |
| ccgcctttct cccttcggga agcgtggcgc tttctcatag ctcacgctgt aggtatctca | 1320 |
| gttcggtgta ggtcgttcgc tccaagctgg gctgtgtgca cgaaccccc gttcagcccg | 1380 |
| accgctgcgc cttatccggt aactatcgtc ttgagtccaa cccggtgaaga cacgacttat | 1440 |
| cgccactggc agcagccact ggtaacagga ttagcagagc gaggtatgta ggcggtgcta | 1500 |
| cagagttctt gaagtgggtg cctaactacg gctacactag aagaacagta tttggtatct | 1560 |
| gcgctctgct gaagccagtt accttcggaa aaagagttgg tagctcttga tccggcaaac | 1620 |
| aaaccaccgc tggtagcggg ggtttttttg tttgcaagca gcagattacg cgcagaaaaa | 1680 |
| aaggatctca agaagatcct ttgatctttt ctacggggct agcgcttaga agaactcatc | 1740 |
| cagcagacgg tagaatgcaa tacgttgaga gtctggagct gcaataccat acagaaccag | 1800 |
| gaaacggtca gccattcac caccagttc ctctgcaatg tcacgggtag ccagtgcaat | 1860 |
| gtcctggtaa cggcttgcaa caccagacg accacagtca atgaaaccag agaaacgacc | 1920 |
| attctcaacc atgatgttcg gcaggcatgc atcaccatga gtaactacca ggtcctcacc | 1980 |
| atccggcata cgagctttca gacgtgcaaa cagttcagcc ggtgccagac cctgatgttc | 2040 |
| ctcatccagg tcatcctggt caaccagacc tgcttccata cgggtacgag cacgttcaat | 2100 |
| acgatgtttt gcctgggtgg caaacggaca ggtagctggg tccagggtgt gcagacgacg | 2160 |
| cattgcatca gccatgatag aaactttctc tgccggagcc aggtgagaag acagcaggtc | 2220 |
| ctgaccgga acttcacca gcagcagcca gtcacgacca gttcagtaa ctacatccag | 2280 |
| aactgcagca cacggaacac cagtggttgc cagccaagac agacgagctg cttcatcctg | 2340 |

| | |
|---|------|
| cagttcattc agagcaccag acaggtcagt tttacaaaac agaactggac gaccctgtgc | 2400 |
| agacagacgg aaaacagctg catcagagca accaatgggc tgctgtgccc agtcataacc | 2460 |
| aaacagacgt tcaacccagg ctgccggaga acctgcatgc agaccatcct gttcaatcat | 2520 |
| gcgaaacgat cctcatcctg tctcttgatc agatcttgat cccctgcgcc atcagatcct | 2580 |
| tggcggcaag aaagccatcc agtttacttt gcagggcttc ccaaccttac cagagggcgc | 2640 |
| cccagctggc aattccgggt cgcttgctgt ccataaaacc gccagtccta gcaactgttg | 2700 |
| ggaagggcga tcg | 2713 |

<210> 13

<211> 2704

<212> DNA

<213> artificial sequence

<220>

<223> Vector with a bovine codon optimized GHRH analog sequence

<400> 13

| | |
|--|------|
| tgtaatacga ctcactatag ggcgaattgg agctccaccg cgggtggcggc cgtccgccct | 60 |
| cggcaccatc ctcacgacac ccaaatatgg cgacgggtga ggaatggtgg ggagttattt | 120 |
| ttagagcggg gaggaagggt ggcaggcagc aggtggtggc gctctaaaaa taactcccgg | 180 |
| gagttatttt tagagcggag gaatggtgga cacccaaata tggcgacggg tcctcaccgg | 240 |
| tcgccatatt tgggtgtccg ccctcggccg gggccgcatt cctggggggc gggcgggtgct | 300 |
| cccggccgcc tcgataaaag gctccggggc cggcggcggc ccacgagcta cccggaggag | 360 |
| cgggaggcgc caagcggatc ccaaggcca actccccgaa ccactcaggg tcctgtggac | 420 |
| agctcaccta gctgccatgg tgctgtgggt gttcttctctg gtgaccctga ccctgagcag | 480 |
| cggctcccac ggtccctgc cctcccagcc tctgcgcac cctcgctacg ccgacgccat | 540 |
| cttcaccaac agctaccgca aggtgctcgg ccagctcagc gcccgaagc tcctgcagga | 600 |
| catcatgaac cggcagcagg gcgagcgcaa ccaggagcag ggagcctgat aagcttatcg | 660 |
| gggtggcatc cctgtgaccc ctccccagtg cctctcctgg ccctggaagt tgccactcca | 720 |
| gtgcccacca gccttgcct aataaaatta agttgcatca ttttgtctga ctaggtgtcc | 780 |
| ttctataata ttatgggggt gaggggggtg gtatggagca aggggcaagt tgggaagaca | 840 |
| acctgtaggg ctcgaggggg ggcccgggtac cagcttttgt tccctttagt gagggttaat | 900 |
| ttcgagcttg gtcttccgct tcctcgctca ctgactcgct gcgctcggtc gttcggctgc | 960 |
| ggcgagcggg atcagctcac tcaaaggcgg taatacgggt atccacagaa tcaggggata | 1020 |
| acgcaggaaa gaacatgtga gcaaaaggcc agcaaaaggc caggaaccgt aaaaaggccg | 1080 |

| | |
|--|------|
| cgttgctggc gtttttccat aggctccgcc cccctgacga gcatcacaaa aatcgacgct | 1140 |
| caagtcagag gtggcgaaac ccgacaggac tataaagata ccaggcgttt cccctggaa | 1200 |
| gctccctcgt gcgctctcct gttccgaccc tgccgcttac cggatacctg tccgcctttc | 1260 |
| tcccttcggg aagcgtggcg ctttctcata gctcacgctg taggtatctc agttcgggtg | 1320 |
| aggtcgttcg ctccaagctg ggctgtgtgc acgaaccccc cgttcagccc gaccgctgcg | 1380 |
| ccttatccgg taactatcgt cttgagtcca acccggttaag acacgactta tcgccactgg | 1440 |
| cagcagccac tggtaacagg attagcagag cgaggatgtg aggcgggtgct acagagttct | 1500 |
| tgaagtgggtg gcctaactac ggctacacta gaagaacagt atttggtatc tgcgctctgc | 1560 |
| tgaagccagt taccttcgga aaaagagttg gtagctcttg atccggcaaa caaaccaccg | 1620 |
| ctggtagcgg tggttttttt gtttgcaagc agcagattac gcgcagaaaa aaaggatctc | 1680 |
| aagaagatcc tttgatcttt tctacggggc tagcgcttag aagaactcat ccagcagacg | 1740 |
| gtagaatgca atacgttgag agtctggagc tgcaatacca tacagaacca ggaaacggtc | 1800 |
| agcccattca ccaccagtt cctctgcaat gtcacgggta gccagtgcaa tgtcctggta | 1860 |
| acggctctgca acaccagac gaccacagtc aatgaaacca gagaaacgac cattctcaac | 1920 |
| catgatgttc ggcaggcatg catcaccatg agtaactacc aggtcctcac catccggcat | 1980 |
| acgagctttc agacgtgcaa acagttcagc cggtgccaga ccctgatggt cctcatccag | 2040 |
| gtcatcctgg tcaaccagac ctgcttccat acgggtacga gcacgttcaa tacgatgttt | 2100 |
| tgcttgggtg tcaaacggac aggtagctgg gtccagggtg tgcagacgac gcattgcatc | 2160 |
| agccatgata gaaactttct ctgccggagc caggtgagaa gacagcaggt cctgaccggg | 2220 |
| aacttcaccc agcagcagcc agtcacgacc agcttcagta actacatcca gaactgcagc | 2280 |
| acacggaaca ccagtgggtg ccagccaaga cagacgagct gcttcacct gcagttcatt | 2340 |
| cagagcacca gacaggtcag ttttaacaaa cagaactgga cgaccctgtg cagacagacg | 2400 |
| gaaaacagct gcatcagagc aaccaatggt ctgctgtgcc cagtcataac caaacagacg | 2460 |
| ttcaaccag gctgccggag aacctgcatg cagaccatcc tgttcaatca tgcgaaacga | 2520 |
| tcctcatcct gtctcttgat cagatcttga tcccctgcgc catcagatcc ttggcggcaa | 2580 |
| gaaagccatc cagtttactt tgcagggtt cccaacctta ccagagggcg cccagctgg | 2640 |
| caattccggt tcgcttgctg tccataaaac cgcccagtct agcaactgtt gggaaggcg | 2700 |
| atcg | 2704 |

<210> 14
 <211> 2704
 <212> DNA

<213> artificial sequence

<220>

<223> Vector with a ovine codon optimized GHRH analog sequence

<400> 14

| | | | | | | | | | | | | |
|-----|----------|------|------------|------|------------|-------|-----------|------|-----------|-------|----------|------|
| tgt | aatacga | ctc | actatag | ggc | gaattgg | agc | tccaccg | cgg | tggcggc | cgt | ccgccct | 60 |
| cgg | caccatc | ctc | acgacac | cca | aatatgg | cg | acgggtga | gga | atggtgg | gg | agttat | 120 |
| tt | agagcgg | t | gaggaaggtg | gg | caggcagc | agg | tgttggc | gct | ctaaaa | ta | actccc | 180 |
| gag | ttat | ttt | tagagcggag | ga | atggtgga | cac | ccaaata | tgg | cgcaggt | tc | tcaccc | 240 |
| tc | gcatatt | tgg | gtgtccg | cc | tcggccg | ggg | cgcatt | cct | ggggg | ggg | cgggtg | 300 |
| ccc | gcccgc | tc | gataaaag | g | tc | cg | ggggc | cg | gcggc | ta | ccggagg | 360 |
| cgg | gaggcgc | ca | agcggatc | cca | aggcca | act | ccccga | cc | actcagg | tc | ctgtgg | 420 |
| ag | tcaccta | g | ctgcatgg | tg | ctgtgggt | gtt | cttcctg | gt | gaccctga | cc | ctgagcag | 480 |
| cgg | aagccac | gg | cagcctgc | cc | agccagcc | c | ctgaggatc | c | taggtacg | cc | gacgccat | 540 |
| ctt | caccaac | ag | ctacagga | ag | atcctggg | cc | agctgagc | g | ctaggaagc | tc | ctgcagga | 600 |
| cat | catgaac | agg | cagcagg | gc | gagaggaa | cc | aggagcag | gg | cgcctgat | a | agcttatc | 660 |
| ggg | tggcatc | c | ctgtgaccc | ct | ccccagtg | c | ctctcctgg | cc | ctggaagt | tg | ccactcca | 720 |
| gtg | ccccacca | gc | cttgtcct | a | ataaaatta | ag | ttgcatca | tt | ttgtctga | ct | aggtgtcc | 780 |
| tt | ctataata | tt | atgggggtg | g | aggggggtg | gt | atggagca | ag | gggcaagt | tg | ggaagaca | 840 |
| ac | ctgtaggg | ct | cagggggg | gg | ccccgggtac | c | agcttttgt | t | ccctttagt | g | aggggtta | 900 |
| tt | cagacttg | gt | cttc | cgc | ct | ctca | ctgactc | gc | gtc | cggtc | gttc | 960 |
| gg | c | gagc | ggt | at | cagct | cac | tcaa | agg | cgg | ta | atac | 1020 |
| ac | gcag | gaaa | ga | acat | gtga | g | caaaa | agg | cc | ag | caacc | 1080 |
| c | gtt | gct | ggc | gt | ttttt | ccat | agg | ctcc | gc | ccc | ctgac | 1140 |
| ca | ag | tcag | ag | gt | gg | cga | aaac | cc | gac | agg | ac | 1200 |
| g | ct | ccct | cgt | gc | gt | ctc | ct | gt | tc | cg | ac | 1260 |
| t | cc | ct | cgg | ag | cg | tgg | cg | gt | gg | cg | gt | 1320 |
| ag | gt | cgt | tcg | ct | cca | agctg | gg | ct | gt | gt | gc | 1380 |
| c | ct | tat | ccg | ta | act | atcgt | ctt | gag | tcca | a | ccg | 1440 |
| c | ag | cag | ccac | t | g | taac | agg | att | ag | cag | ag | 1500 |
| t | ga | ag | tgg | t | g | gc | ta | act | ac | ga | ag | 1560 |
| t | ga | ag | ccag | t | ta | cttc | gga | aaa | ag | ag | ttg | 1620 |

| | | | | | | |
|-------------|------------|------------|------------|-------------|------------|------|
| ctggtagcgg | tggttttttt | gtttgcaagc | agcagattac | gcgcagaaaa | aaaggatctc | 1680 |
| aagaagatcc | tttgatcttt | tctacggggc | tagcgcttag | aagaactcat | ccagcagacg | 1740 |
| gtagaatgca | atacgttgag | agtctggagc | tgcaatacca | tacagaacca | ggaaacggtc | 1800 |
| agcccattca | ccacccagtt | cctctgcaat | gtcacgggta | gccagtgcaa | tgtcctggta | 1860 |
| acgggtctgca | acacccagac | gaccacagtc | aatgaaacca | gagaaacgac | cattctcaac | 1920 |
| catgatgttc | ggcaggcatg | catcaccatg | agtaactacc | aggtcctcac | catccggcat | 1980 |
| acgagctttc | agacgtgcaa | acagttcagc | cggtgccaga | ccctgatgtt | cctcatccag | 2040 |
| gtcatcctgg | tcaaccagac | ctgcttccat | acgggtacga | gcacgttcaa | tacgatgttt | 2100 |
| tgcttggtgg | tcaaacggac | aggtagctgg | gtccagggtg | tgacagacgac | gcattgcac | 2160 |
| agccatgata | gaaactttct | ctgccggagc | caggtgagaa | gacagcaggt | cctgacccgg | 2220 |
| aacttcaccc | agcagcagcc | agtcacgacc | agcttcagta | actacatcca | gaactgcagc | 2280 |
| acacggaaca | ccagtgggtg | ccagccaaga | cagacgagct | gcttcatcct | gcagttcatt | 2340 |
| cagagcacca | gacaggtcag | ttttaacaaa | cagaactgga | cgaccctgtg | cagacagacg | 2400 |
| gaaaacagct | gcatcagagc | aaccaatggt | ctgctgtgcc | cagtcataac | caaacagacg | 2460 |
| ttcaaccag | gctgccggag | aacctgcatg | cagaccatcc | tgttcaatca | tgcgaaacga | 2520 |
| tcctcatcct | gtctcttgat | cagatcttga | tcccctgcgc | catcagatcc | ttggcggcaa | 2580 |
| gaaagccatc | cagtttactt | tgaggggctt | cccaacctta | ccagagggcg | ccccagctgg | 2640 |
| caattccggt | tcgcttgctg | tccataaaac | cgcccagtct | agcaactgtt | gggaagggcg | 2700 |
| atcg | | | | | | 2704 |

<210> 15
 <211> 2713
 <212> DNA
 <213> artificial sequence

<220>
 <223> Vector with a chicken codon optimized GHRH analog sequence

| | | |
|------------|-------------|---|
| <400> 15 | | |
| tgtaatacga | ctcactatag | ggcgaattgg agctccaccg cggtggcggc cgtccgccct 60 |
| cggcaccatc | ctcacgacac | ccaaatatgg cgacgggtga ggaatgggtg ggagttattt 120 |
| ttagagcggg | gaggaagggtg | ggcaggcagc aggtgttggtc gctctaaaaa taactcccgg 180 |
| gagttatttt | tagagcggag | gaatgggtgga caccctaaata tggcgacggg tcctcaccgg 240 |
| tcgccatatt | tgggtgtccg | ccctcgggcg gggccgcatt cctggggggc gggcggtgct 300 |
| cccgcccgcc | tcgataaaag | gctccggggc cggcggcggc ccacgagcta cccggaggag 360 |

| | |
|--|------|
| cgaggaggcgc caagcggatc ccaaggccca actccccgaa ccactcaggg tcctgtggac | 420 |
| agctcaccta gctgccatgg ccctgtgggt gttctttgtg ctgctgaccc tgacctccgg | 480 |
| aagccactgc agcctgccac ccagcccacc cttccgcgtc aggcgccacg ccgacggcat | 540 |
| cttcagcaag gcctaccgca agctcctggg ccagctgagc gcacgcaact acctgcacag | 600 |
| cctgatggcc aagcgcgtgg gcagcggact gggagacgag gccgagcccc tgagctgata | 660 |
| agcttatcgg ggtggcatcc ctgtgacccc tccccagtgc ctctcctggc cctggaagtt | 720 |
| gccactccag tgcccaccag ccttgctcta ataaaattaa gttgcatcat tttgtctgac | 780 |
| taggtgtcct tctataatat tatgggggtg aggggggtgg tatggagcaa ggggcaagtt | 840 |
| gggaagacaa cctgtagggc tcgagggggg gcccggtacc agcttttgtt ccctttagtg | 900 |
| agggttaatt tcgagcttgg tcttccgctt cctcgtcac tgactcgtg cgctcggtcg | 960 |
| ttcggctgcg gcgagcggtg tcagctcact caaaggcgtt aatacggtta tccacagaat | 1020 |
| caggggataa cgcaggaaag aacatgtgag caaaaggcca gcaaaggcc aggaaccgta | 1080 |
| aaaaggccgc gttgctggcg tttttccata ggctccgcc ccctgacgag catcacaaaa | 1140 |
| atcgacgctc aagtcagagg tggcgaaacc cgacaggact ataaagatac caggcgtttc | 1200 |
| cccctggaag ctccctcgtg cgctctcctg ttccgaccct gccgcttacc ggatacctgt | 1260 |
| ccgcctttct cccttcggga agcgtggcgc tttctcatag ctcacgctgt aggtatctca | 1320 |
| gttcgggtgta ggtcgttcgc tccaagctgg gctgtgtgca cgaaccccc gttcagcccg | 1380 |
| accgctgcgc cttatccggt aactatcgtc ttgagtccaa cccggtaga cactgattat | 1440 |
| cggcactggc agcagccact ggtaacagga ttagcagagc gaggtatgta ggcggtgcta | 1500 |
| cagagttctt gaagtgggtg cctaactacg gctacactag aagaacagta tttggtatct | 1560 |
| gcgctctgct gaagccagtt accttcggaa aaagagttgg tagctcttga tccggcaaac | 1620 |
| aaaccaccgc tggtagcggg ggtttttttg tttgcaagca gcagattacg cgcagaaaaa | 1680 |
| aaggatctca agaagatcct ttgatctttt ctacggggct agcgcttaga agaactcatc | 1740 |
| cagcagacgg tagaatgcaa tacgttgaga gtctggagct gcaataccat acagaaccag | 1800 |
| gaaacgggtca gccattcac caccagttc ctctgcaatg tcacgggtag ccagtgcaat | 1860 |
| gtcctggtaa cggctctgcaa caccagacg accacagtca atgaaaccag agaaacgacc | 1920 |
| attctcaacc atgatgttcg gcaggcatgc atcaccatga gtaactacca ggtcctcacc | 1980 |
| atccggcata cgagctttca gacgtgcaaa cagttcagcc ggtgccagac cctgatgttc | 2040 |
| ctcatccagg tcactctggt caaccagacc tgcttcata cgggtacgag cacgttcaat | 2100 |
| acgatgtttt gcctgggtgg caaacggaca ggtagctggg tccaggggtg gcagacgacg | 2160 |

| | |
|---|------|
| cattgcatca gccatgatag aaactttctc tgccggagcc aggtgagaag acagcaggtc | 2220 |
| ctgacccgga acttcaccca gcagcagcca gtcacgacca gttcagtaa ctacatccag | 2280 |
| aactgcagca cacggaacac cagtgggtgc cagccaagac agacgagctg cttcatcctg | 2340 |
| cagttcattc agagcaccag acaggtcagt tttaacaaac agaactggac gaccctgtgc | 2400 |
| agacagacgg aaaacagctg catcagagca accaatggtc tgctgtgccc agtcataacc | 2460 |
| aaacagacgt tcaaccagg ctgccggaga acctgcatgc agaccatcct gttcaatcat | 2520 |
| gcgaaacgat cctcatcctg tctcttgatc agatcttgat cccctgcgcc atcagatcct | 2580 |
| tggcggcaag aaagccatcc agtttacttt gcagggcttc ccaaccttac cagagggcgc | 2640 |
| cccagctggc aattccggtt cgcttgctgt ccataaaacc gccaggtcta gcaactgttg | 2700 |
| ggaagggcga tcg | 2713 |

<210> 16
 <211> 382
 <212> DNA
 <213> artificial sequence

<220>
 <223> This is the synthetic promoter c1-26.

| | |
|---|-----|
| <400> 16 | |
| ggcggccgag ggcggcgggg caggcagcag gtgttggcac cattcctcac cgctctaaaa | 60 |
| ataactcccc tgaggaatgg tgccgtcgcc atatttgggt gtcgacaccc aaatatggcg | 120 |
| acgggtgagg aatggtgggc aggcagcagg tgttgggaca cccaaatatg gcgacggcca | 180 |
| acacctgctg cctgccggga gttattttta gagcggggag ttatttttag agcggtgagg | 240 |
| aatggtggac acccaaatat ggcgacggcc ggggccgcat tcctgggggc cgggcggtgc | 300 |
| tcccgccgc ctcgataaaa ggctccgggg ccggcggcgg cccacgagct acccgaggga | 360 |
| gcgggaggcg ccaagctcta ga | 382 |

<210> 17
 <211> 218
 <212> DNA
 <213> artificial sequence

<220>
 <223> This is the synthetic promoter sequence for c2-26.

| | |
|---|-----|
| <400> 17 | |
| cgccgctgc catatttggg tgtccgtctt aaaaataact cccgacaccc aaatatggcg | 60 |
| acggggcagg cagcaggtgt tgggacaccc aaatatggcg acggccgggg ccgcattcct | 120 |
| gggggcccgg cggtgctccc gcccgcctcg ataaaaggct ccggggccgg cggcggccca | 180 |

cgagctaccc ggaggagcgg gaggcgccaa gctctaga

218

<210> 18
<211> 230
<212> DNA
<213> artificial sequence

<220>
<223> This is the synthetic sequence for c2-27.

<400> 18
cggccgtcgc catatttggg tgtcggcagg cagcaggtgt tggcaccatt cctcaccctg 60
cgccatattt ggggtgtcggc aggcagcagt gttgggacac ccaaatatgg cgacggccgg 120
ggccgcattc ctggggggccg ggcggtgctc ccgcccgcct cgataaaaagg ctccggggcc 180
ggcggcggcc cacgagctac ccggaggagc gggaggcgcc aagctctaga 230

<210> 19
<211> 231
<212> DNA
<213> artificial sequence

<220>
<223> This is the synthetic promoter for c5-5.

<400> 19
cggccgtccg ccctcgggac acccaaatat ggcgacgggt gaggaatggt gcaccattcc 60
tcacgggagt tattttttaga gcggtgagga atggtggaca ccaaatatg gcgacggccg 120
gggccgcatt cctggggggcc gggcggtgct cccgcccgc tcgataaaaag gctccggggc 180
cggcggcggc ccacgagcta cccggaggag cgggaggcgc caagctctag a 231

<210> 20
<211> 255
<212> DNA
<213> artificial sequence

<220>
<223> This is the synthetic promoter for c6-5.

<400> 20
cggccgtcgc catatttggg tgtccaaca cctgctgcct gcccgcgc catatttgggt 60
gtcggcaggc agcaggtgtt ggccaacacc tgctgcctgc cgggagttat ttttagagcg 120
gacacccaaa tatggcgacg gccggggccg cattcctggg ggccggggcg tgctcccgc 180
cgctcgata aaaggctccg gggccggcg cggcccacga gctaccggga ggagcgggag 240
gcgccaagct ctaga 255

<210> 21

<211> 283
<212> DNA
<213> artificial sequence

<220>

<223> This is the synthetic promoter for c6-16.

<400> 21
cggccgtcgc catatttggg tgtccgctct aaaaataact cccccaacac ctgctgcctg 60
ccccgtcgc atatttgggt gtcggcaggc agcagggtgtt ggccaacacc tgctgcctgc 120
cccaacacct gctgcctgcc ccgtcgccat atttggtgtc cgccctcggc cggggccgca 180
ttcctggggg cggggcggtg ctcccgccc cctcgataaa aggctccggg gccggcggtg 240
gccacgagc taccggagg agcgggagg gccaaagtct aga 283

<210> 22
<211> 263
<212> DNA
<213> artificial sequence

<220>

<223> This is the synthetic promoter for c6-39.

<400> 22
cggccgtccg ccctcggggg agttattttt agagcgccaa cacctgctgc ctgccccgtc 60
gcatatttg ggtgtcggca ggcagcagg gttgggggag ttatttttag agcgccgtcg 120
ccatatttg gtgtcccgag ggcggacggc cggggccgca ttcctggggg cggggcggtg 180
ctcccgccc cctcgataaa aggctccggg gccggcggtg gccacgagc taccggagg 240
agcgggagg gccaaagtct aga 263